Vehicular Instrumentation Systems

CAN-COMMUNICATOR (C-COM)
USER GUIDE

AMETEK®
VEHICULAR INSTRUMENTATION SYSTEMS

Rev A

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DESCRIPTION

The CAN-Communicator (C-COM) provides the advantages of a graphic display in a compact, 2-inch gauge form factor. This rugged and versatile gauge can be used exclusively, or as a compliment, to any existing instrumentation simply by connecting it to an SAE J1939 (CAN) data bus. The gauge can display data and diagnostics, both active and stored faults from the individual ECMs, directly from the vehicle data bus.

There are 3 buttons for navigating the screens through an intuitive menu system, displaying diagnostics, parametric data and popup warnings. Diagnostic capabilities include both active and stored fault codes from the ECU. Data can be viewed as a single parameter or as three parameters, which the user can scroll through to view additional data. C-COM is also populated with popular warning messages (pop-ups) to alert the user to conditions on the vehicle.

C-COM is designed for additional flexibility to the user. The setup menu screens provide customization to the data line items and warning messages that can be displayed. Warnings can also be set to provide an output for an external buzzer. The setup menus allow for units to be switched to English or metric and set the display contrast and brightness.

The backlit liquid crystal display (LCD) is 106 pixels wide and 56 pixels high, providing clear, legible graphics. Backlighting can be controlled through the menu or an external dimmer. A dead-fronted warning indicator is positioned above the graphic display window and is capable of illuminating as an amber or red warning for active fault codes and popup warnings, respectively.

C-COM is sealed to IP67 specifications both front and rear of the gauge and operates from 9 to 32 volts DC. C-COM can also accept an analog input, as an option to add a parameter for viewing. Included is a switch-to-ground output that can be used to control an external annunciator, relay, or other device.

This user guide is intended to help you set up C-COM, understand product features and navigate the menu system.

SPECIFICATIONS

Physical Characteristics
Housing and bezel material: Chrome or Black polycarbonate ABS plastic
Connector: Single Deutsch DT06, polarized and locking

Environmental Characteristics
Temperature, humidity, shock, vibration, and salt spray: Meets or exceeds SAE #J1455-1994-08
Operating Temperature: -20 to +85°C

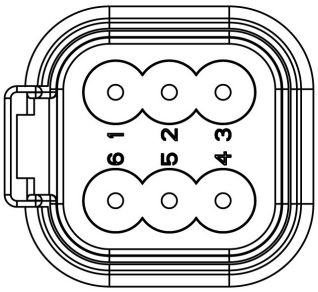
Electrical Characteristics
Operating limits: 9 to 32 VDC, reverse polarity protected
Transient protection: Meets or exceeds SAE #J1455-1994-08

Electrical Inputs
Battery/ignition: 9 to 32 volts
Input current: 500 mA
Backlighting: Variable through dashlight dimmer control or through display menu
Data bus: SAE J1939 (CAN)

Electrical Outputs
Switch to ground: One, 500 mA

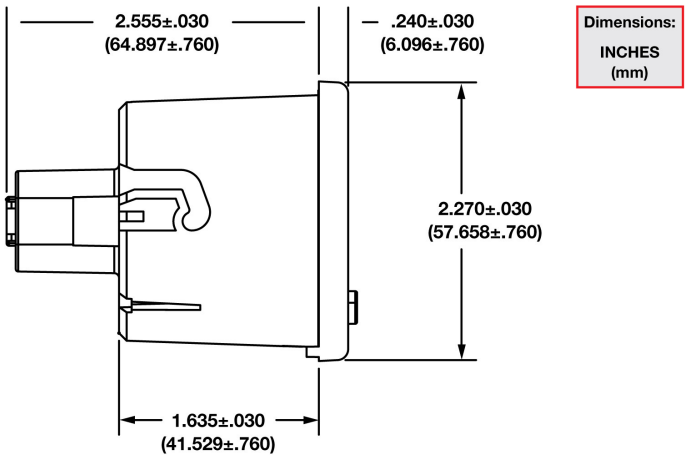
Display Characteristics
Type: Positive mode, transflective, LCD dot matrix, FSTN
Aperture size (inches): 1.21W × 0.64H
Pixel dimensions: 106 pixels wide, 56 pixels high
Viewing angle: 12:00
Backlight color: Standard is Amber (can be customized to any color)

Electrical Connections

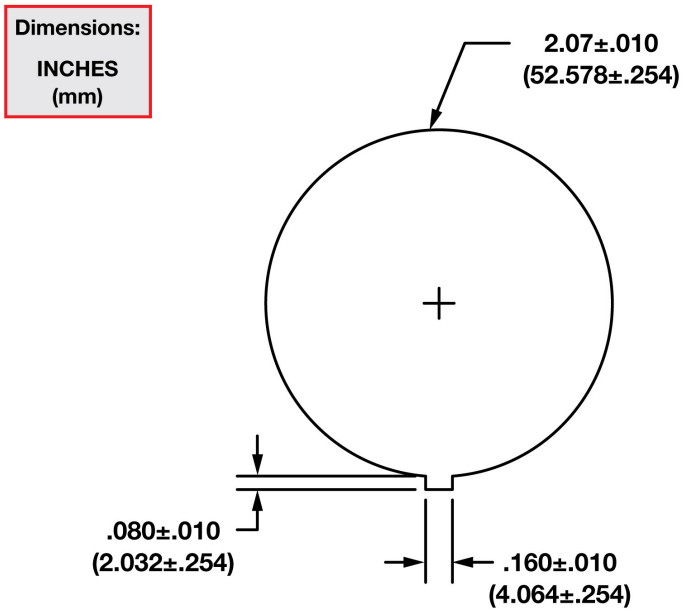


PIN	SIGNAL
1	Battery/Ignition
2	Ground
3	Backlight (optional Analog input)
4	J1939+
5	J1939-
6	Output, switch to ground

Gauge Dimensions



Panel Cut-Out Dimensions



STANDARD DISPLAY PARAMETERS

DATA PARAMETERS

The following are the standard data parameters. Other data parameters broadcast on J1939 data bus can be added as a custom system.

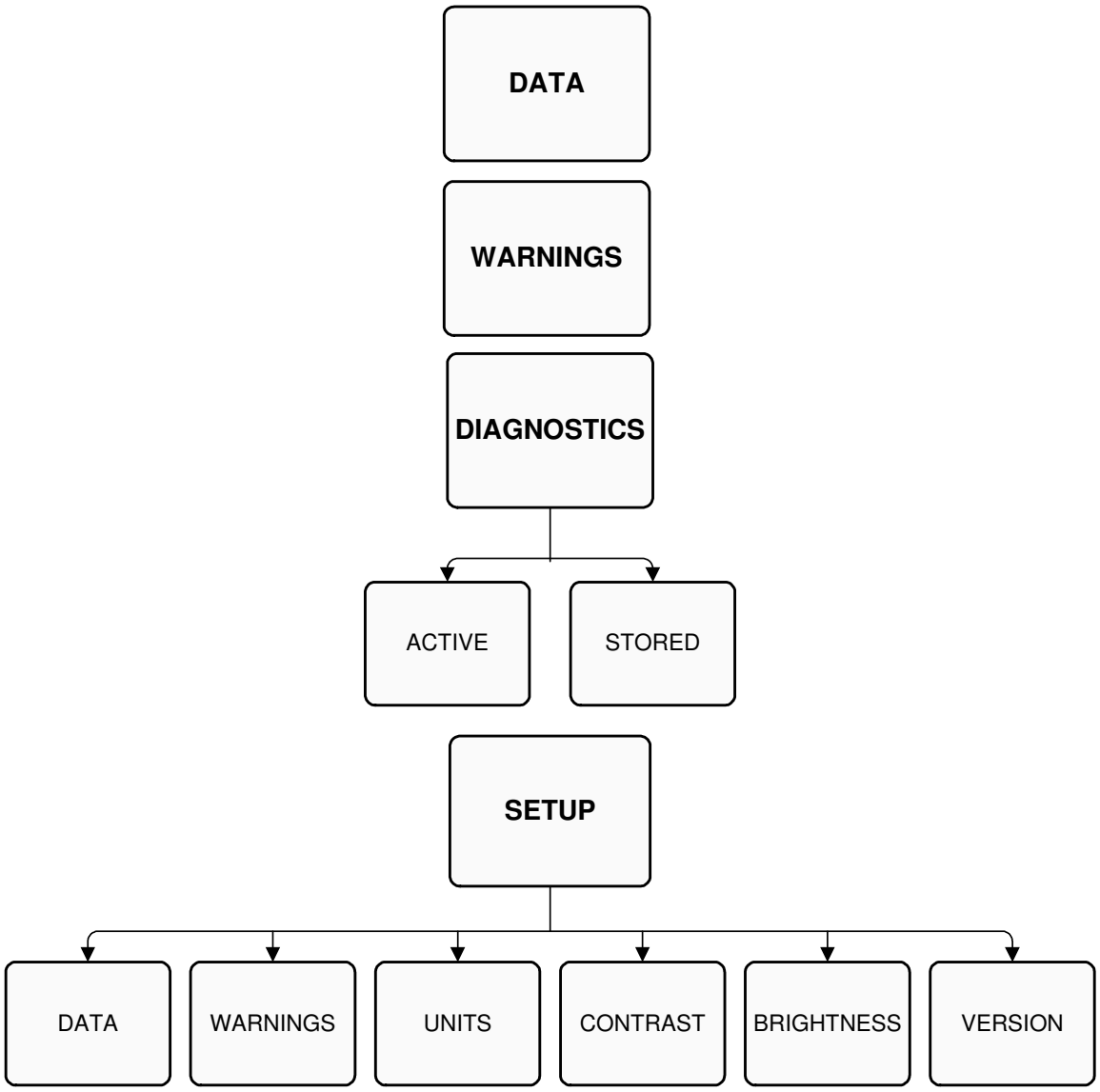
- Vehicle Speed
- Engine RPM
- Engine Oil Pressure
- Coolant Temperature
- Engine Oil Temperature
- Battery Voltage
- Turbo Boost Pressure
- Transmission Oil Temperature
- Engine Hours

POPUP WARNING MESSAGES

The following are the standard popup warning messages. Other messages broadcast on J1939 data bus can be added as a custom system.

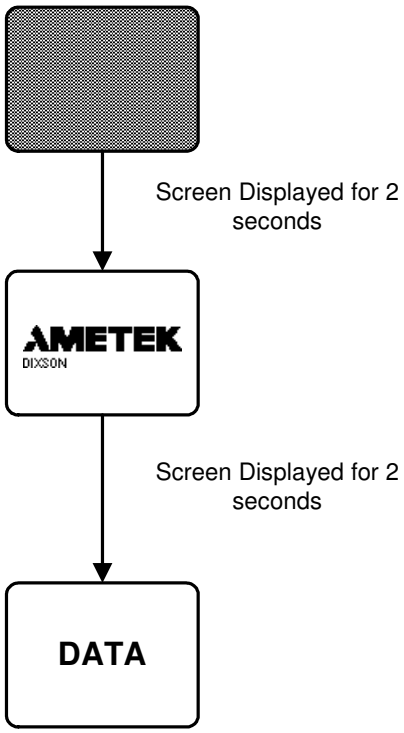
- Coolant Temperature
- Engine Oil Pressure
- Engine Oil Temperature
- Transmission Temperature
- Battery Voltage
- Check Engine
- Stop Engine
- Check Transmission

SCREEN MENU OVERVIEW



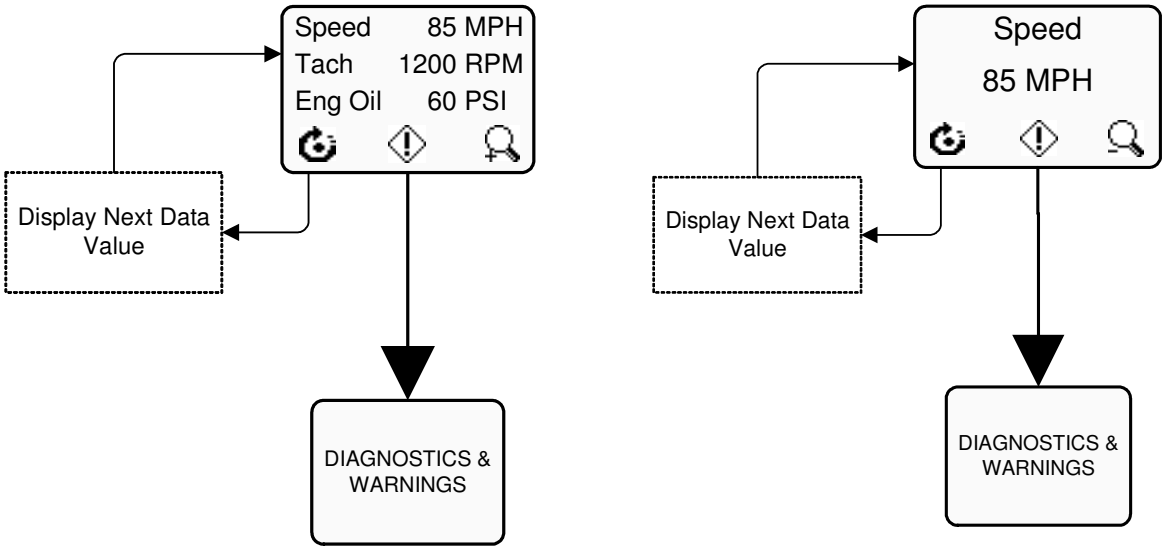
SCREEN MENU DETAIL

POWER UP



1. When power is first applied to C-COM, the display will turn on all pixels for two seconds.
2. The Ametek logo will then be displayed for two seconds.
3. Data screens are now displayed, unless a popup message(s) is active, which will remain on the display until the condition goes away or the message is dismissed with a button press.

DATA



1. The first three data values will be displayed. Press the left button, corresponding to the scroll prompt, to scroll through all of the data values. Data parameters in a standard product include:

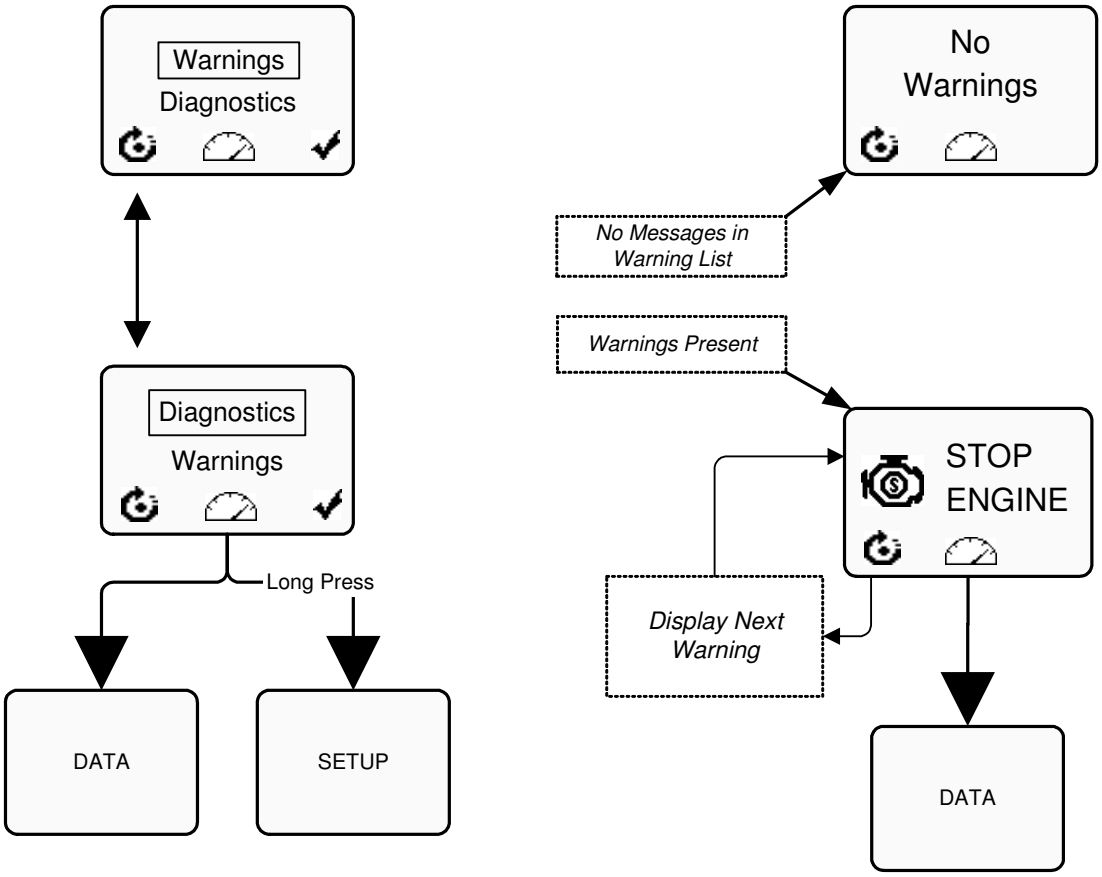
   - Vehicle Speed
   - Engine RPM
   - Engine Oil Pressure
   - Coolant Temperature
   - Engine Oil Temperature
   - Battery Voltage
   - Turbo Boost Pressure
   - Transmission Oil Temperature
   - Engine Hours

2. To view a single data value in a larger format, press the right button, corresponding to the magnifier prompt. Data values can also be scrolled in this view. Press the right button again, now corresponding to the demagnifier prompt, to display the three data values.

3. Pressing the center button, corresponding to the warning prompt, from either data view will change the display to Diagnostics and Warnings.

DIAGNOSTICS AND WARNINGS

WARNINGS



1. Press the left button, corresponding to the scroll prompt, to select between Warnings and Diagnostics.

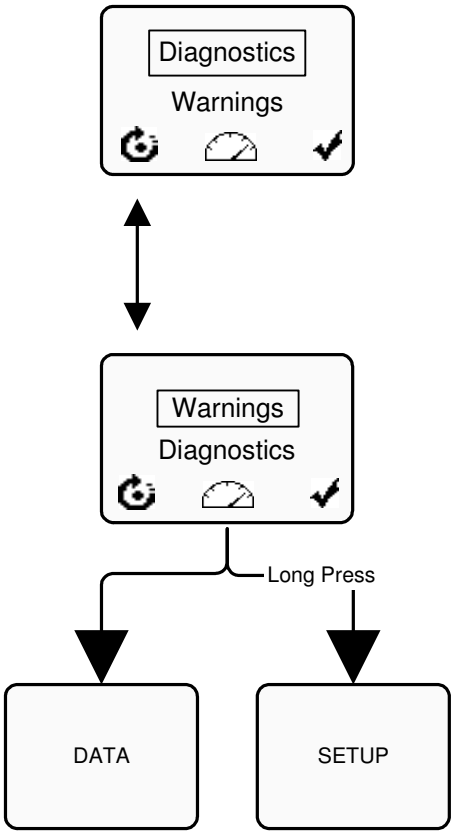
2. Select Warnings by pressing the right button, corresponding to the check prompt.

3. If there are no warnings in the list, the display will read No Warnings. If there are warnings present, the first Warning Message will be displayed. Press the left button, scroll prompt, to view additional warning messages.

4. By pressing the center button, gauge prompt, will return to the Data screens. A long-hold press of the center button, 2 seconds, will display the Setup menu screens.

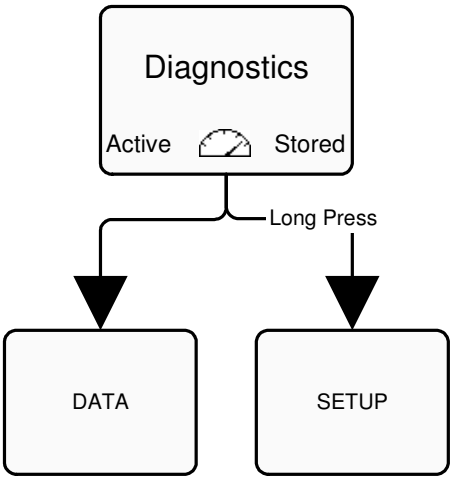
DIAGNOSTICS AND WARNINGS

DIAGNOSTICS – ACTIVE

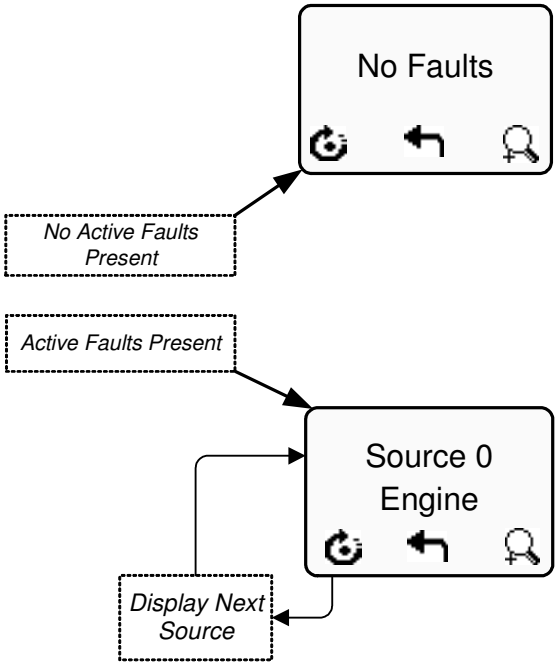


1. Press the left button, corresponding to the scroll prompt, to select between Warnings and Diagnostics.

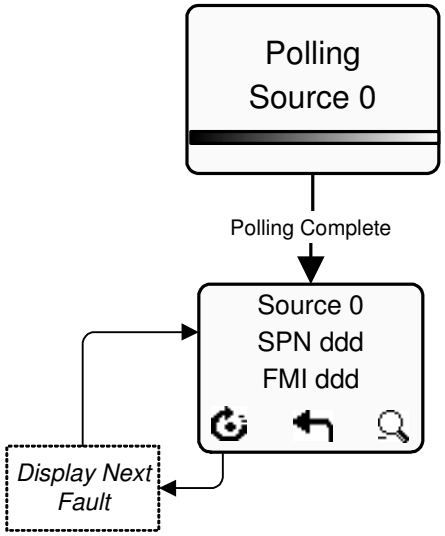
2. Select Diagnostics by pressing the right button, corresponding to the check prompt.



3. Select Active by pressing the left button, corresponding to the active prompt. Pressing the center button, gauge prompt, will return to the Data screens. A long-hold press of the center button, 2 seconds, will display the Setup menu screens.



4. If there are no active fault codes present, the display will read No Faults. If there are fault codes present, the first source of fault codes will be displayed. Press the left button, scroll prompt, to view additional sources. A center button press, back arrow prompt, will return to the Diagnostics Active and Stored screen.

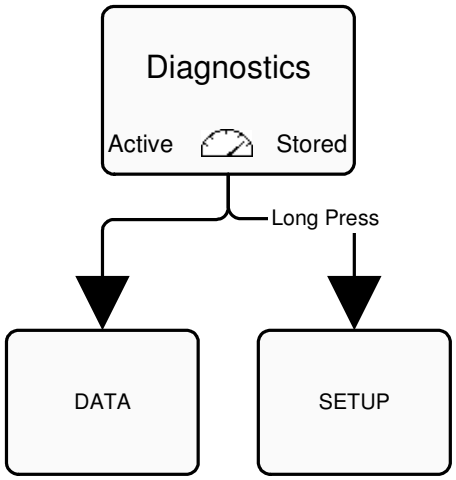


5. Press the right button, magnifier prompt, to view the fault code details. The gauge will begin polling the selected source and once it is complete will display the fault code. The left button, scroll prompt, will scroll through all the active fault codes in the current source.

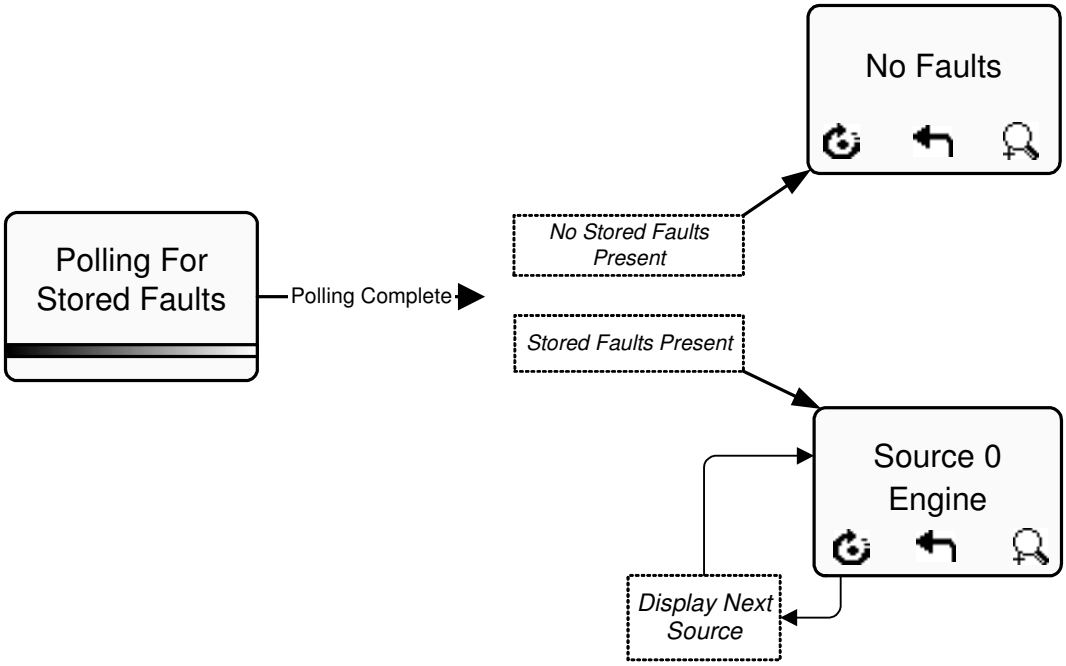
6. By pressing the center button, back arrow prompt, will return to the Source screens. A press of the right button, demagnifier prompt, will display the Source screens also.

DIAGNOSTICS AND WARNINGS

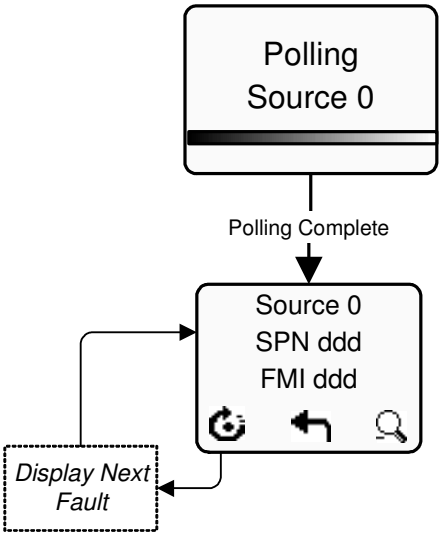
DIAGNOSTICS – STORED



1. Select Stored by pressing the right button, corresponding to the stored prompt. Pressing the center button, gauge prompt, will return to the Data screens. A long-hold press of the center button, 2 seconds, will display the Setup menu screens.



2. The gauge will begin polling for stored faults. Upon completion, if there are no stored faults present, the display will read No Faults. If there are fault codes stored, the first source of fault codes will be displayed. Press the left button, scroll prompt, to view additional sources. A center button press, back arrow prompt, will return to the Diagnostics Active and Stored screen.

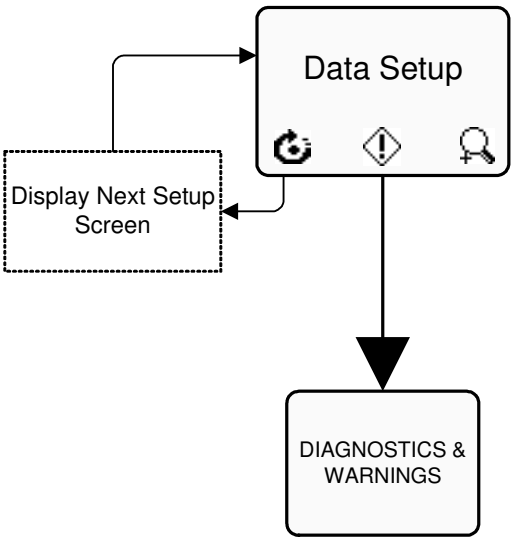


3. Press the right button, magnifier prompt, to view the fault code details. The gauge will begin polling the selected source and once it is complete will display the fault code. The left button, scroll prompt, will scroll through all the active fault codes in the current source.

4. By pressing the center button, back arrow prompt, will return to the Source screens. A press of the right button, demagnifier prompt, will display the Source screens also.

SETUP

DATA

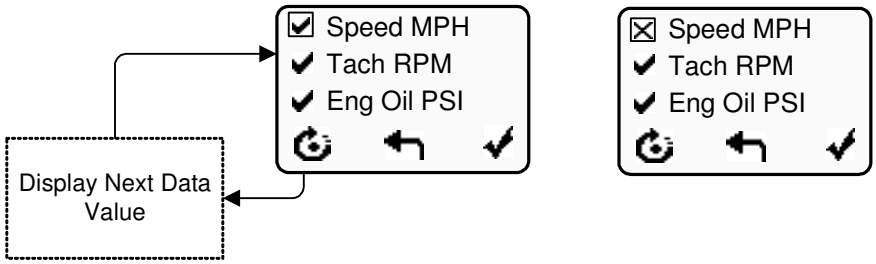


1. A long-hold press of the center button, 2 seconds, in the Diagnostics and Warnings screen, will display the Setup menu screens.

2. Press the left button, scroll prompt, to select the next Setup option, Warning Setup.

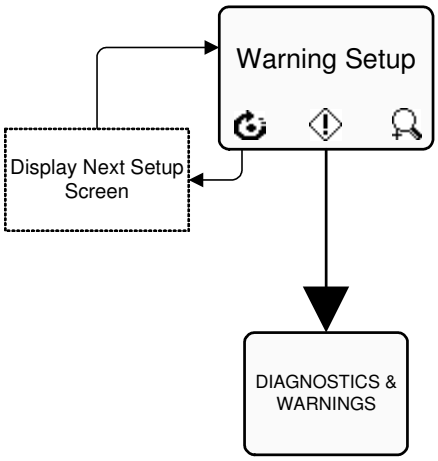
3. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

4. Press the right button, magnifier prompt, to access the Data Setup menu.



5. All of the standard data parameters will be listed with check marks next to them, indicating that they are selected to display in the Data view. To deselect a data parameter, press the right button, corresponding to the check mark prompt. An X will now appear next to that data parameter.
6. By pressing the right button again, the data value will once again be selected and have a check mark next to it.
7. Press the left button, scroll prompt, to scroll through each of the data parameters.
8. The center button, back arrow prompt, will return to the Data Setup main screen.

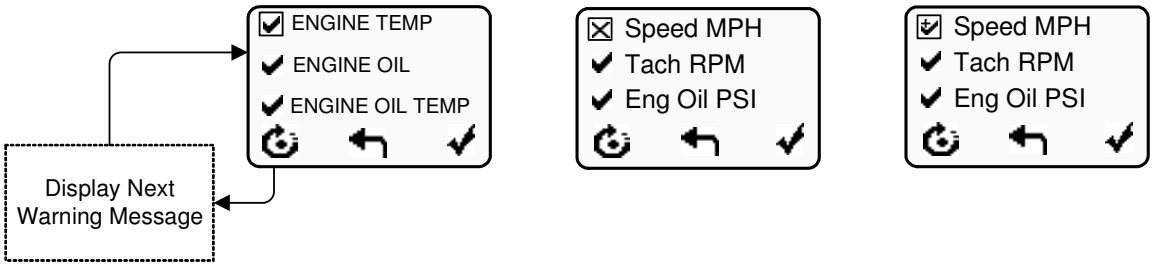
WARNING



1. Press the left button, scroll prompt, to select the next Setup option, Units Setup.

2. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

3. Press the right button, magnifier prompt, to access the Warning Setup menu.



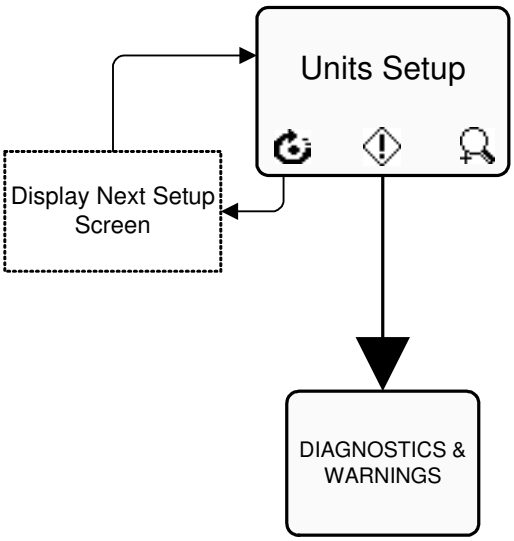
4. All of the standard warning messages will be listed with check marks next to them, indicating that they are selected to display as Popup warning messages. To deselect a warning, press the right button, corresponding to the check mark prompt. An X will now appear next to that warning.

5. By pressing the right button again, the warning will have a check mark with a plus sign, to indicate that the switch-to-ground output will be used to control an external annunciator, relay or other device. Another press of the right button will select the warning with a check mark.

6. Press the left button, scroll prompt, to scroll through each of the warnings.

7. The center button, back arrow prompt, will return to the Warning Setup main screen.

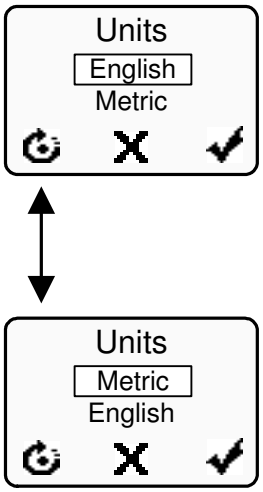
UNITS



1. Press the left button, scroll prompt, to select the next Setup option, Contrast.

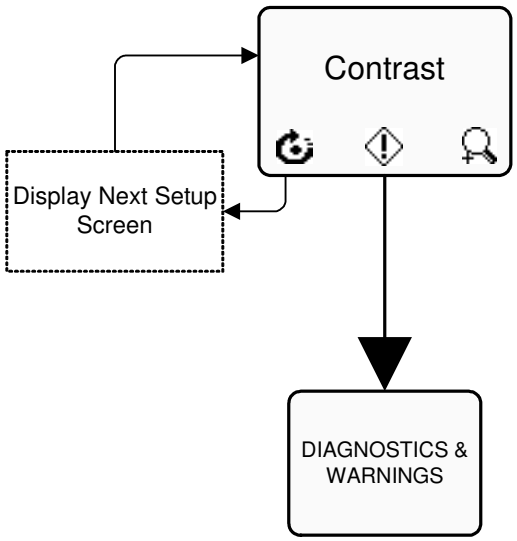
2. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

3. Press the right button, magnifier prompt, to access the Units Setup menu.



4. Press the left button, scroll prompt, to switch between English and metric units. To select the unit, press the right button, check mark prompt. To cancel, press the center button, cancel prompt. Each of these button presses will return to the Units Setup main screen.

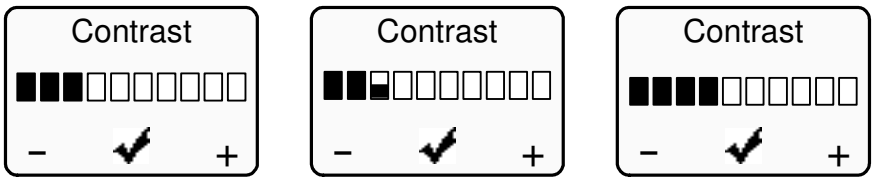
CONTRAST



1. Press the left button, scroll prompt, to select the next Setup option, Brightness.

2. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

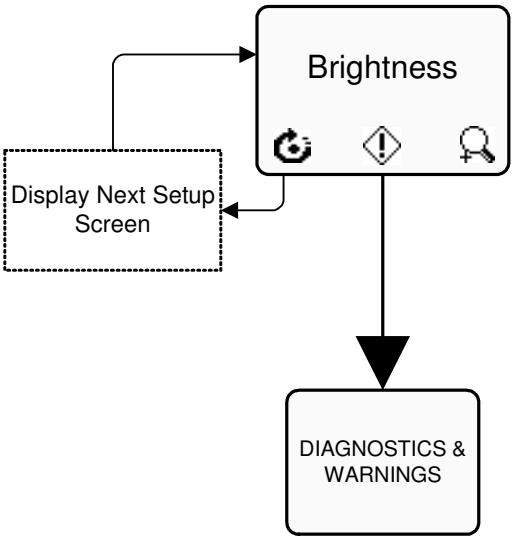
3. Press the right button, magnifier prompt, to access the Contrast menu.



4. To increase the contrast, press the right button, corresponding to the plus sign prompt. To decrease the contrast, press the left button, corresponding to the minus sign prompt. The contrast will increase/decrease a half step with each press. Pressing and holding either of these buttons will increase/decrease the contrast by full steps and will continue until the button is released or has reached its minimum or maximum setting.

5. A center button press, check mark prompt, will select the current contrast and return to the Contrast main menu.

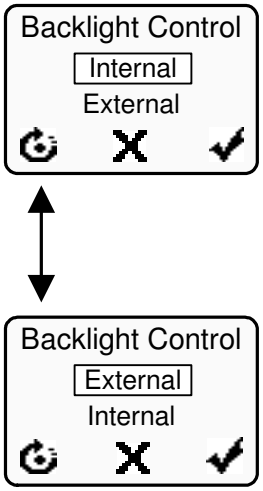
BRIGHTNESS



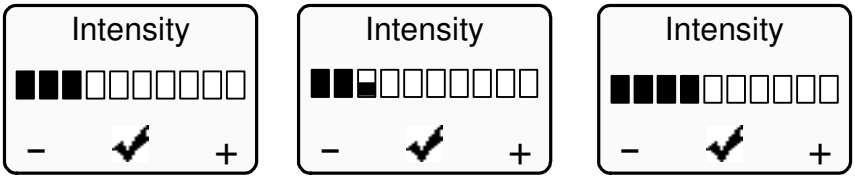
1. Press the left button, scroll prompt, to select the next Setup option, Version.

2. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

3. Press the right button, magnifier prompt, to access the Brightness menu.



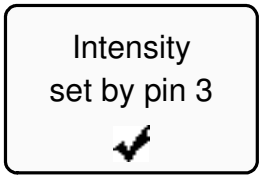
5. Press the left button, scroll prompt, to choose between internal or external backlight control. To select the control type, press the right button, check mark prompt. To cancel, press the center button, cancel prompt, which will return to the Brightness main screen.



6. If Internal backlight control is selected, the backlight intensity can be adjusted manually in this view.

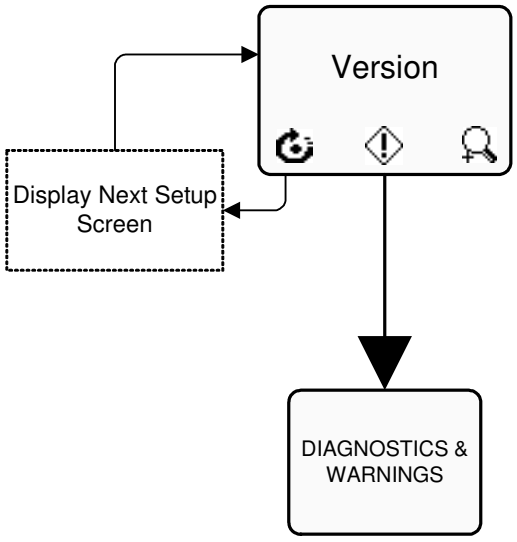
7. To increase the intensity, press the right button, corresponding to the plus sign prompt. To decrease the intensity, press the left button, corresponding to the minus sign prompt. The intensity will increase/decrease a half step with each press. Pressing and holding either of these buttons will increase/decrease the intensity by full steps and will continue until the button is released or has reached its minimum or maximum setting.

8. A center button press, check mark prompt, will select the current intensity setting and return to the Brightness main menu.



9. If External backlight control is selected, the backlight intensity is controlled through an external source and must be connected to pin 3 . Press the center button, check mark prompt, will return to the Brightness main screen.

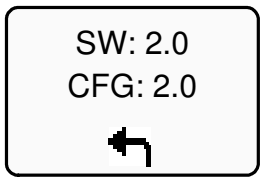
VERSION



1. Press the left button, scroll prompt, to select the next Setup option, Data.

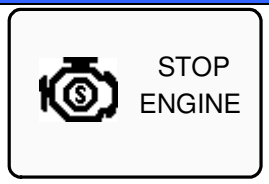
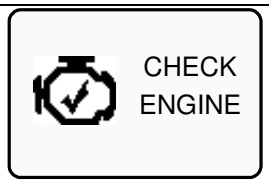
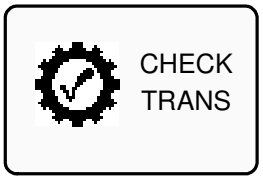
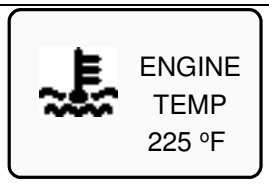
2. By pressing the center button, warning prompt, will return to the Diagnostics and Warnings screen.

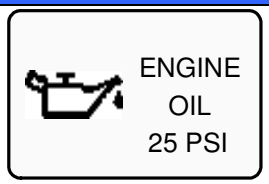
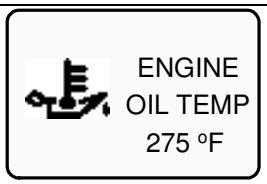
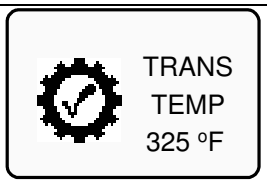
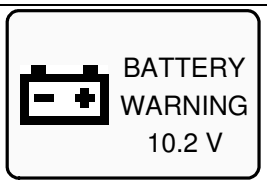
3. Press the right button, magnifier prompt, to access the Version menu.



4. The code and configuration versions programmed into the C-COM gauge will be displayed. Press the center button, back arrow prompt, to return to the Version main screen.

POPUP MESSAGES

MESSAGE	ACTIVATION
	PGN = 65,226 (*DM1*), SA = 0 SPN = Any, FMI = Any Red Stop Lamp On
	PGN = 65,226 (*DM1*), SA = 0 SPN = Any, FMI = Any Amber Warning Lamp On
	PGN = 65,226 (*DM1*), SA = 3 SPN = Any, FMI = Any Amber Warning Lamp On
	PGN = 65,226 (*DM1*), SA = 0, SPN = 110, FMI = 0,15,16

MESSAGE	ACTIVATION
	PGN = 65,226 (*DM1*), SA = 0, SPN = 100, FMI = 1,17,18
	PGN = 65,226 (*DM1*), SA = 0, SPN = 175, FMI = 0,15,16
	PGN = 65,226 (*DM1*), SA = 3, SPN = 177, FMI = 0,15,16
	PGN = 65,226 (*DM1*), SA = 0, SPN = 168, FMI = 0,15,16, 1,17,18

The table above outlines the pop-up warning messages C-COM will display when an activation message is received from the J1939 databus. These messages will replace whatever is currently on the display until either the condition goes away or the message is dismissed.

Messages can be dismissed via left, center or right button press. Once a pop up message is dismissed via key press, it does not activate again during the current ignition cycle unless the trigger condition goes inactive and then active again.

END OF DOCUMENT